

REMARKS

The Examiner's attention to the present application is noted with appreciation. Claims 3-6 and 14-16 have been cancelled, claims 2, 9, 10, 12, 13, 19, and 20 have been amended, and claims 21-30 have been added to more accurately claim the present invention. No new matter has been added.

Applicant gratefully acknowledges the Examiner's indication that claims 5, 6, 15 and 16 are allowable if rewritten in independent form. However, for the reasons set forth herein, it is submitted that all claims as amended are allowable.

In the Examiner's Response to Arguments on page 4 of the Office Action, the Examiner states that Thaler's "laser propels the particles towards the substrate and therefore controls the direction of flight," implying that the laser collimates the particles. This assertion is incorrect. To collimate means to make parallel (see, for example, *The American Heritage® Dictionary of the English Language, Fourth Edition*). As applied to particles, this means that the velocity vectors of the particles are parallel, or alternatively, that lateral spreading of a stream of particles is prevented or limited. This is separate from propelling particles toward the substrate. Propelling a particle toward a substrate located in the z direction from the particle source means imparting a velocity to the particle which has a nonzero z component. It does NOT mean that the x and y components of the velocity are substantially zero. If the x and y components are not substantially zero, then the beam will spread and no collimation is occurring. Thus the laser of Thaler collimates the particles only if their velocity vectors are parallel.

This is not the case with the teachings of Thaler. Thaler clearly teaches divergence or spreading of the particle stream before it hits the substrate; see Figs. 5 and 7-10 and col. 8, lines 11-14. Thus, the lateral components of the velocity are not substantially zero, so no collimation is occurring. Without some other means of laterally confining the particle stream, a laser propelling the particles cannot collimate them. It can only impart to the particles a nonzero velocity in the beam direction (i.e., propel the particles to the substrate); it cannot counteract any particle velocities in the x and y direction. These teachings are consistent with the purpose of Thaler, which is to coat the entire surface of a substrate (column 1, lines

16-33). The invention of Thaler benefits from as widely dispersed a particle stream as possible, in order to rapidly coat a large surface area of the substrate.

For the Examiner's convenience, in the two following paragraphs applicant repeats remarks that were submitted in the last amendment. Applicant wishes to point out that the present claims require collimation or collimation means, not simply means for propelling particles.

The Examiner rejected claims 1 and 7-9 under U.S.C. 102(a) as being anticipated by Thaler. Such rejection is respectfully traversed. Contrary to the Examiner's assertions, Thaler does not disclose collimating means for controlling the direction of flight the particles. The laser (element 20) does not collimate the particles; it serves to heat both them and the substrate. The laser beam is focused, not to collimate the particles, but to limit the global heating of the substrate (column 7, lines 41-50). Further, when the laser is sufficiently focused to propel the particles (column 8, lines 42-60), it cannot collimate the particles. Similarly, the tube (element 35) disclosed by Thaler serves solely to inject a carrier gas to propel the particles to the substrate. This carrier gas does not collimate the particles, but merely propels them to the substrate. Neither the laser nor the carrier gas of Thaler has the ability to collimate, i.e. limit or otherwise control, the direction of the particles.

There is nothing disclosed by Thaler which anticipates, or makes obvious, collimating means for particles being deposited on a substrate. Thus the Examiner's rejection of claims 2-4 under U.S.C. 103(a) as being unpatentable over Thaler in view of Ogren et al. is also respectfully traversed, since Ogren et al. is cited solely for their disclosure of a virtual impactor.

If any issues remain, or if the Examiner believes that prosecution of this application might be expedited by discussion of the issues, the Examiner is cordially invited to telephone the undersigned attorney for Applicant at the telephone number listed below.

A check for additional claim fees is attached. Also being filed herewith is a Petition for Extension of Time to January 24, 2005, with the appropriate fee. Authorization is given to charge payment of any additional fees required, or credit any overpayment, to Deposit Acct. 13-4213. A duplicate of this paper is enclosed for accounting purposes.

Respectfully submitted,



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